

REMARKS

Claims 1-6 are pending. By this Amendment, claims 5 and 6 are amended, thereby leaving claims 1-4 unchanged.

In a telephonic interview between the undersigned and Examiner Elahee on February 10, 2005, Examiner Elahee agreed to remove the finality of the Office action mailed on December 16, 2004 and indicated that he would mail an interview summary to the same effect. Accordingly, the present application is not under a final rejection.

Applicant has amended independent claim 6 to correct a typographical error and, accordingly, the claim scope of independent claim 6 has not been altered in view of this amendment.

35 U.S.C. §102(e) Rejection

Claim 6 stands rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,297,776 ("Pankinaho").

Independent claim 6 recites (*italics added for emphasis*):

An internal antenna of a portable communication unit which is accommodated in a casing composed of a front case and a rear case together with a printed circuit board, comprising:

a radiator situated inside said rear case,

an antenna metal element which is connected with said radiator at an output end thereof, and brought into contact with a feeding terminal formed on said printed circuit board at an input end thereof,

a reflecting plane which is situated opposited to said radiator maintaining a predetermined interval therebetween,

a conductive painting which is applied to an inner surface of said rear case and brought into contact with a grounding pattern of said printed circuit board, and

connecting terminals which connect an edge of said reflecting plane with said conductive painting via contacting means.

Pankinaho does not teach or suggest, among other things, an internal antenna including an antenna metal element which is connected with a radiator at an output end thereof, and brought into contact with a feeding terminal formed on said printed circuit board at an input end thereof. The Examiner attempts to satisfy these limitations of claim 6 on page 2 of the Office action dated December 16, 2004 by making reference to Figs. 12b and 12c and by citing Col. 7,

lines 13-56. These references and this citation by the Examiner do not teach or suggest the above referenced limitations of claim 6. More particularly, the above citation and references disclose a radiator 10, a matching element 100 and a circuit board 330 having a ground plane 20 and a conductive patch 25. The matching element 100 is connected to the radiator 10, but clearly does not contact any portion of the printed circuit board 330 and, as is relevant in the disclosure of Pankinaho, clearly does not contact conductive patch 25. Within the cited section of Pankinaho and in the drawings referenced by the Examiner, there is clear support for the Applicant's contention. More particularly, with reference to Figs. 12b and 12c, the matching element 100 is clearly spaced a distance from the conductive patch 25. Also, Pankinaho discloses that "...the matching element is realized in such a manner that its distance from the separate conductive patch 25..." (Col. 7, lines 51-52). With this disclosure in Pankinaho, the matching element 100 clearly does not satisfy all the limitations of the antenna metal element claimed in claim 6.

From the Examiner's reference to Figs. 12b and 12c and the citation of Col. 7, lines 13-56, no other component of Pankinaho discloses the limitations of the antenna metal element as is claimed in claim 6. Accordingly, the Examiner's contention that the antenna metal element and the limitations associated therewith is disclosed in Figs. 12b and 12c and Col. 7, lines 13-56 is improper. In addition to the antenna metal element not being disclosed in these figures and this citation, the antenna metal element is not taught or suggested in any part of Pankinaho.

Also, Pankinaho does not teach or suggest a reflecting plane. The Examiner attempts to cite the matching element as a reflecting plane and references Figs. 12b and 12c and cites Col. 7, lines 13-56 and Col. 8, lines 33-49. One of ordinary skill in the art understands that a matching element is not a reflecting plane. A reflecting plane is used to reflect electrical waves radiated from a radiator away from other components of a communication device, particularly the radio components of the communication device. Such electrical waves can cause interference and inhibit communication. The matching element 100 of Pankinaho is not a reflecting plane. Rather, the matching element 100 disclosed in Pankinaho is used to control certain characteristics of the antenna such as resonance frequency, bandwidth and radiator impedance. In the present case, the matching element 100 is adjustable to control the capacitance between the matching element 100 and the ground plane (Col. 3, lines 47-64). Accordingly, the matching element 100 is not a reflecting plane and Pankinaho does not teach or suggest a reflecting plane.

Further, Pankinaho does not teach or suggest a conductive painting which is applied to an inner surface of a rear case. Again, the Examiner references Figs. 12b and 12c and cites Col. 7, lines 13-56 as support for his contention. The Examiner also attempts to rely on the conductive patch 25 as conductive paint. A patch is not paint. Further, assuming arguendo that the patch 25 could be paint, the patch 25 is not applied to an inner surface of a rear case. Rather, the patch 25 is connected to a printed circuit board 330 (see Figs. 12b and 12c). Also, there is no disclosure of conductive painting or of conductive painting being applied to an inner surface of a rear case in the citation of Col. 7, lines 13-56. Accordingly, Pankinaho does not teach or suggest a conductive painting as recited in claim 6.

Further yet, Pankinaho does not teach or suggest connecting terminals which connect an edge of a reflecting plane with conductive painting via contacting means. As indicated above, Pankinaho does not teach or suggest a reflecting plane or conductive painting. Accordingly, Pankinaho cannot teach or suggest connecting terminals which connect an edge of a reflecting plane with a conductive painting as recited in claim 6.

For these and other reasons, Pankinaho does not teach or suggest the subject matter of independent claim 6. Accordingly, independent claim 6 is allowable.

35 U.S.C. §103(a) Rejections

Claims 1-4 stand rejected under 35 U.S.C. §103(a) as being unpatentable over European Publication No. 0,522,538 ("Yokoyama") in view of U.S. Patent No. 6,327,495 ("Iwabuchi et al."). Also, claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Yokoyama in view of Iwabuchi et al. and Pankinaho.

Independent claim 1 recites (*italics added for emphasis*):

A portable communication unit comprising:
a printed circuit board on which a radio unit composed of a transmitter and a receiver is mounted,
a grounding pattern on the printed circuit board,
an internal antenna which is classified into an inverted F shaped antenna or a dielectric antenna,
an antenna metal element which is connected with a feeding point of said internal antenna at an output end thereof, and brought into contact with a feeding terminal formed on said printed circuit board at an input end thereof,
a front case which is provided with a data-inputting key, an information-displaying means, a speaker, and a microphone, and

a rear case which is provided with a space for accommodating said internal antenna, and extending said grounding pattern to an inner surface of the rear case when fitted to said front case to form a casing, wherein said internal antenna is supported between said rear case and said printed circuit board.

Yokoyama does not teach or suggest, among other things, a portable communication device including an antenna metal element which is connected with a feeding point of an internal antenna at an output end thereof, and brought into contact with a feeding terminal formed on said printed circuit board at an input end thereof. The Examiner refers to Fig. 2 and a plurality of citations from the disclosure of Yokoyama to support the contention that Yokoyama discloses an antenna metal element as claimed in claim 1. More specifically, the Examiner cites Col. 1, line 42-Col. 2, line 2, Col. 3, lines 4-6 and 22-31, and Col. 4, line 51-Col. 5, line 1. Applicant respectfully submits that none of these references or citations disclose the antenna metal element as claimed in claim 1. Particularly, Col. 1, line 42-Col. 2, line 2 discloses antenna means, radio means including electrical parts, and a circuit board. This citation primarily discusses the radio means, the electrical parts of the radio means and how the electrical parts of the radio means are connected to a conductive film of a housing. There is no disclosure of an antenna metal element as claimed in claim 1. Likewise, Col. 3, lines 4-6 discloses an antenna section 31 coupled with the radio section via a connector. This citation does not disclose an antenna metal element contacting a printed circuit board. Similarly, Col. 3, lines 22-31 discloses how an antenna section 13 receives transmission signals and radio waves. Again, there is no disclosure of an antenna metal element as claimed in claim 1. Finally, Col. 4, line 51-Col. 5, line 1 discloses electrical parts 14a and 14b of the radio means brought into contact with the housing 15b of the circuit board 11 and an electromagnetic shielding body is developed. Again, no disclosure of an antenna metal element as claimed in claim 1. For these and other reasons, Yokoyama does not teach or suggest the antenna metal element as claimed in claim 1.

Iwabuchi et al. does not cure the deficiencies of Yokoyama. More particularly, Iwabuchi et al. does not teach or suggest, among other things, a portable communication device including an antenna metal element which is connected with a feeding point of an internal antenna at an output end thereof, and brought into contact with a feeding terminal formed on said printed circuit board at an input end thereof.

For these and other reasons, Yokoyama and Iwabuchi et al., either alone or in combination, do not teach or suggest the subject matter of independent claim 1. Accordingly,

independent claim 1 is allowable. Claims 2-4 depend from independent claim 1 and are allowable for the same and other reasons.

Claim 5 has been amended into independent form including all the subject matter of its base claim, claim 1, and the intervening claim, claim 3. Independent claim 5 recites (*italics* added for emphasis):

A portable communication unit comprising:
a printed circuit board on which a radio unit composed of a transmitter and a receiver is mounted,
a grounding pattern on the printed circuit board,
an internal antenna which is classified into an inverted F shaped antenna or a dielectric antenna,
an antenna metal element which is connected with a feeding point of said internal antenna at an output end thereof, and brought into contact with a feeding terminal formed on said printed circuit board at an input end thereof,
a front case which is provided with a data-inputting key; an information-displaying means, a speaker, and a microphone,
a rear case which is provided with a space for accommodating said internal antenna, and extending said grounding pattern to an inner surface of the rear case when fitted to said front case to form a casing,
wherein said internal antenna is supported between said rear case and said printed circuit board,
a conductive painting is applied to a predetermined region of an inner surface of said rear case, and brought into contact with the grounding pattern of said printed circuit board,
said internal antenna is composed of:
a radiator which is situated inside said rear case and connected with said metal element,
a reflecting plane which is situated opposite to said radiator maintaining a predetermined interval therebetween, and
connecting terminals which connect an edge of said *reflecting plane* with said *conductive painting*.

The Examiner rejected claim 5 for the same reasons as for independent claim 6.

As set forth above in the claim 6 discussion, Applicant submits that Pankinaho does not teach or suggest, among other things, an antenna metal element, conductive painting, and a reflecting plane. These limitations are recited in Claim 5. Accordingly, Pankinaho does not teach or suggest the claimed subject matter of independent claim 5.

Neither Yokoyama nor Iwabuchi et al. cures the deficiencies of Pankinaho. As indicated above with respect to the claim 1 discussion, Yokoyama and Iwabuchi do not teach or suggest,

among other things, an antenna metal element. This limitation is in claim 5. Accordingly, Yokoyama and Iwabuchi do not teach or suggest the subject matter of independent claim 5.

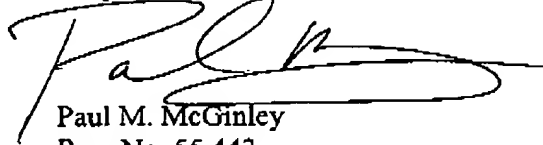
For these and other reason, Pankinaho, Yokoyama and Iwabuchi et al., either alone or in combination, do not teach or suggest the subject matter of independent claim 5. Accordingly, independent claim 5 is allowable.

CONCLUSION

In view of the foregoing, entry of the present Amendment and allowance of claims 1-6 are respectfully requested.

The undersigned is available for telephone consultation during normal business hours.

Respectfully submitted,



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